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| FAY SHARPE LLP 1228 Euclid Avenue, 5th Floor The Halle Building Cleveland, OH 44115 | | | EXAMINER PIZIALI, JEFFREY J | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--|--|
| Office Action Summary | Application No. 10/701,051 | Applicant(s) CHENG, CHUN-FAI | |
| | Examiner JEFF PIZIALI | Art Unit 2629 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 June 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-12 is/are pending in the application.
- 4a) Of the above claim(s) 8 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7 and 9-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 June 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on *18 June 2009* has been entered.

Drawings

2. The drawings were received on *18 June 2009*. These drawings are acceptable.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: ***R5, R6, R9, R10, R15, and R16*** (*see page 9, lines 21-23 of the specification*).

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will

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be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings have not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the figures.

Specification

5. The specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. *Claims 1, 3-7, and 9-12* are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 1 recites the limitation "***video signal gray level data***" (*line 3*). The lack of a grammatical article (such as "*a*" or "*a plurality of*" or "*the*" or "*said*") preceding the limitation

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renders it unclear whether the claim is establishing a new element; or instead referring back to some preestablished limitation.

For example, it would be unclear to an artisan whether a single element of "**data**" is being claimed; or rather whether a plurality of "**data**" elements are being claimed.

9. Claim 1 provides for the use of a ramping voltage (*e.g., line 7: "a ramping voltage that is used during driving of columns"*), but, since the claim does not set forth any steps involved in the method/process, it is unclear what method/process applicant is intending to encompass. A claim is indefinite where it merely recites a use without any active, positive steps delimiting how this use is actually practiced.

Claim 1 is rejected under 35 U.S.C. 101 because the claimed recitation of a use (*e.g., line 7: "a ramping voltage that is used during driving of columns"*), without setting forth any steps involved in the process, results in an improper definition of a process under 35 U.S.C. 101. See for example *Ex parte Dunki*, 153 USPQ 678 (Bd.App. 1967) and *Clinical Products, Ltd. v. Brenner*, 255 F. Supp. 131, 149 USPQ 475 (D.D.C. 1966).

10. Claim 1 recites the limitation "**the maximum voltage**" (*line 14*). There is insufficient antecedent basis for this limitation in the claim.

11. Claim 4 recites the limitations "**a negative row voltage**" (*line 14*) and "**a positive row voltage**" (*line 5*). There is insufficient antecedent basis for these "*row*" limitations in the claim.

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For example: The claim neglects to establish whether or not any "rows" make up the invention. It would be unclear to one having ordinary skill in the art how "***a negative / positive row voltage***" can exist without the presence of at least one "row."

12. The variable "***t***" in claim 4 (*lines 3 and 6*) is a relative term which renders the claim indefinite. The variable "***t***" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It would be unclear to one having ordinary skill in the art what the variable "***t***" is intended to represent.

13. Claim 4 recites the limitation "***the difference between the time t_m for the ramping voltage to reach a maximum luminance voltage value V_m at the end of said time interval***" (*line 3*). There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to one having ordinary skill in the art what elements "***the difference***" is intended to be between. Between the "***time t_m*** " and what else?

14. The term "***V_{g pos}***" in claim 4 (*line 6*) is a relative term which renders the claim indefinite. The term "***V_{g pos}***" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. It would be unclear to one having ordinary skill in the art what the term "***V_{g pos}***" is intended to represent.

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15. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:

"converted to complement valves" (line 7).

For example: It would be unclear to one having ordinary skill in the art what these "valves" are intended to *"complement."*

16. Claim 5 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01.

An omitted structural cooperative relationship results from the claimed subject matter:

"different currents" (line 3).

For example: It would be unclear to one having ordinary skill in the art what these "currents" are intended to be *"different"* from.

17. Claim 5 recites the limitation **"both of said current sources"** (line 6). There is insufficient antecedent basis for this limitation in the claim.

Claim 5 earlier recites **"at least two current sources"** (in line 3).

For example: It would be unclear to one having ordinary skill in the art whether the claimed invention is intended to be limited to only two current sources, or more than two current sources.

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18. Claim 11 recites the limitation "***said at least two current sources further include control inputs controlling the shape of said convex and concave portions respectively***" (lines 1-3).

There is insufficient antecedent basis for this limitation in the claim.

For example: It would be unclear to one having ordinary skill in the art whether the claimed invention is intended to be limited to only two current sources, or more than two current sources.

19. Claim 12 recites the limitation "***said convex and concave***" (line 3). There is insufficient antecedent basis for this limitation in the claim.

20. The remaining claims are rejected under 35 U.S.C. 112, second paragraph, as being dependent upon rejected base claims.

21. The claims are rejected under 35 U.S.C. 112, second paragraph, as being indefinite.

As a courtesy to the Applicant, the examiner has attempted to also make rejections over prior art -- based on the examiner's best guess interpretations of the invention that the Applicant is intending to claim.

However, the indefinite nature of the claimed subject matter naturally hinders the Office's ability to search and examine the application.

Any instantly distinguishing features and subject matter that the Applicant considers to be absent from the cited prior art is more than likely a result of the indefinite nature of the claims.

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The Applicant is respectfully requested to correct the indefinite nature of the claims, which should going forward result in a more precise search and examination.

Claim Rejections - 35 USC § 103

22. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

23. *Claims 1, 3-7, and 9-12* are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Yeo (US 6,049,320 A)*** in view of ***Maurice (US 6,844,874 B2)***.

Regarding claim 1, ***Yeo*** discloses a gray scale column driver [e.g., Fig. 1] for an alternating current display, comprising:

a counter [e.g., Fig. 1; 2] receiving video signal gray level data [e.g., Fig. 1; *digital data incoming from register 1*] and in response

counting for a time interval proportional to said gray level data [e.g., Fig. 2B; *producing pulse width modulated output*]; and

a non linear analogue voltage ramp generator [e.g., Fig. 1; *ramp signal A*] connected to said counter,

said non linear analogue voltage ramp generator outputting a ramping voltage [e.g., Fig. 2A] that is used during driving of columns [e.g., Fig. 1; *C*] of said dielectric electroluminescent display during said time interval, wherein

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said ramping voltage conforms to a curve having an initial convex portion followed by a concave portion, wherein

said initial convex portion conforms to a negative second derivative with respect to said time interval, and

said concave portion conforms to a positive second derivative with respect to said time interval,

said ramping voltage determining the maximum voltage of alternating polarity driving pulses applied to the columns of said dielectric electroluminescent display (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Yeo's display is a liquid crystal display, not an "*electroluminescent display*," as instantly claimed.

However, **Maurice** discloses a non linear analogue voltage ramp generator outputting a ramping voltage [*e.g., Fig. 3; Data Ramp/Line L'i*] that is used during driving of columns [*e.g., Figs. 2, 4; Data Ramp/Line L'i*] of either a liquid crystal display [*e.g., Fig. 2*] or an alternating current electroluminescent display [*e.g., Fig. 4*] (*see the entire document, including Column 5, Lines 24-29*).

Yeo and **Maurice** are analogous art, because they are from the shared inventive field of voltage ramp generators for display devices.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time of invention to use **Yeo's** a gray scale column driver with an electroluminescent display such as the one taught by **Maurice**, so as to provide conventional data driver for use with a commercially popular, alternate display type.

Regarding claim 3, **Yeo** discloses said counter is a 6-bit counter (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

However, the examiner takes official notice that it would have been within the skill of the average artisan to replace a 6-bit counter with an 8-bit counter, so as to delineate said time interval to define more (*e.g.*, 256) display gradations, improving the quality of the displayed image, and enhancing compatibility with higher resolution input image data.

Regarding claim 4, **Yeo** discloses said ramping voltage, for a negative row voltage [*e.g.*, *Fig. 2A; second ramp*] applied to said dielectric electroluminescent display, is $V_g \text{ neg } (t_m - t)$

expressed as a function of the difference between the time t_m for the ramping voltage to reach a maximum luminance voltage value V_m at the end of said time interval, and wherein

said ramping voltage, for a positive row voltage [*e.g.*, *Fig. 2A; first ramp*] applied to said dielectric electroluminescent display, is $V_g \text{ pos.}(t)$, where

$$V_g \text{ pos.}(t) = V_m - V_g \text{ neg } (t_m - t)$$

and said gray level data is converted to complement values (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

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Regarding claim 5, **Yeo** discloses said non linear analogue voltage ramp generator further comprises an integrator circuit [*e.g., Fig. 1; electrode A input to transistors 3 through column C*] and

at least two current sources [*e.g., Fig. 1; three transistors 3*] generating and applying different currents to said integrator circuit

such that when a first one of said current sources [*e.g., Fig. 1; first transistor 3*] is connected to said integrator circuit said convex portion of said ramping voltage is generated,

when both of said current sources [*e.g., Fig. 1; first and second transistors 3*] are connected in parallel to said integrator circuit a transition portion of said ramping voltage between said convex portion and said concave portion is generated, and

when a second one of said current sources [*e.g., Fig. 1; second transistor 3*] is connected to said integrator circuit said concave portion of said ramping voltage is generated (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Regarding claim 6, **Yeo** discloses said first one of said current sources generates a current that decreases during said time interval [*e.g., going from the peak to the end*], and

said second one of said current sources generates a current that increases during said time interval [*e.g., going from the start to the peak*] (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

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Regarding claim 7, **Yeo** discloses said at least two current sources are time-dependent voltage feedback controlled current sources [*e.g., Fig. 1; controlled by counters 2*] (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Regarding claim 9, **Yeo** discloses said non linear analogue voltage ramp generator further comprises a threshold control circuit for controlled switching [*e.g., Fig. 1; 3*] of said at least two current sources (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Regarding claim 10, **Yeo** discloses said non linear analogue voltage ramp generator further comprises a frame polarity control circuit selecting between said ramping voltage for said positive row voltage [*e.g., Fig. 2A; first ramp*] and said ramping voltage for said negative row voltage [*e.g., Fig. 2A; second ramp*] (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Regarding claim 11, **Yeo** discloses said at least two current sources further include control inputs controlling the shape of said convex and concave portions respectively (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

Regarding claim 12, **Yeo** discloses said threshold control circuit further includes a control input setting a transition voltage between said convex and concave of said ramping voltage (*see the entire document, including Figs. 2A & 2B; Column 1, Lines 5-64*).

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Response to Arguments

24. Applicant's remarks filed *18 June 2009* have been fully considered but they are not persuasive.

The Applicant contends, "*The Remarks/Arguments in support of patentability were previously submitted on December 10, 2008. CONCLUSION: It is respectfully submitted that all claims remaining in the application (Claims 1, 3-7, and 9-12) are now in condition for allowance*" (see Page 8 of the Response filed *18 June 2009*). However, the examiner respectfully disagrees.

The Applicant's *10 December 2008* reply merely states, "*REMARKS: Claims 1,3-7, and 9-12 remain in the application. Claims 1,3-5, and 9-12 have been amended. CONCLUSION: It is respectfully submitted that all claims remaining in the application (Claims 1, 3-7, and 9-12) are now in condition for allowance*" (see Page 8 of the Response filed *10 December 2008*).

Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references.

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The Applicant should have submitted an argument under the heading “Remarks” pointing out disagreements with the examiner’s contentions. Applicant must also discuss the references applied against the claims, explaining how the claims avoid the references or distinguish from them.

Applicant's arguments with respect to *claims 1, 3-7, and 9-12* have been considered but are moot in view of the new ground(s) of rejection.

By such reasoning, rejection of the claims is deemed necessary, proper, and thereby maintained at this time.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff Piziali whose telephone number is (571)272-7678. The examiner can normally be reached on Monday - Friday (6:30AM - 3PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chanh Nguyen can be reached on (571) 272-7772. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jeff Piziali/
Primary Examiner, Art Unit 2629
11 September 2009